

# Applicative Shift and Light Heads in Mandarin

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Languages are known to project a wide range of senses via two different syntactic forms (1). Applicative form deploys v/V-projections (often marked by special verbal morphology *-APP*). Oblique form uses an additional class of heads, typically Ps.

(1)	Applicative	Oblique
Form:	$\alpha$ V-APP $\beta$ $\gamma$	$\alpha$ V $\gamma$ [P $\beta$ ]
Sense:	CAUSED POSSESSION, BENEFACTIVE/MALEFACTIVE/ SUBSTITUTIVE, INSTRUMENTAL, CAUSED MOTION/LOCATION, STIMULATIVE, MANNER, REASON	

Some languages favor the latter (e.g., English); some favor the former (e.g, Igbo); some show robust alternation (e.g., Kinyarwanda). The syntactic relation between the forms – derivation vs. separate projection - is controversial.

In this talk we:

- review data from Mandarin oblique arguments in mono- and di-transitives, which diverge both dramatically and subtly (resp.) from comparable English forms.
- sketch an account of projection from Larson (2014), which recasts  $\theta$ -roles as syntactic  $\theta$ -features and  $\theta$ -role assignment as  $\theta$ -feature agreement, and provides a general account of argument inversion.
- propose that Mandarin oblique arguments should be analyzed uniformly as **applied objects**, raised from the position of obliques
- discuss the semantic interpretation of this analysis, and its associated notion of selection.

## 1.0 Oblique Arguments in Mandarin

### 1.1 In Monotransitives

Lin (2001) draws attention to monotransitive paradigms like (2a-d). (2a) shows a “canonical” patient object. (2b-d) show “non-canonical,” objects in oblique thematic roles, here instrument, location and time (resp.).

(2) a. Wo chi <b>niu-rou mian</b> .	b. Wo chi <b>da-wan</b> .
I eat beef noodle	I eat big-bowl
‘I eat beef noodle’	‘I eat <u>with/using</u> a big bowl’
c. Wo chi <b>guanzi</b> .	d. Wo chi <b>xiawu</b> .
I eat restaurant	I eat afternoon
‘I dine <u>at</u> a restaurant’	‘I dine <u>in</u> the afternoon’

As many authors note (Barrie and Li 2014; Li 2011, 2014; Zhang 2005) although the objects in (2b-d) resemble circumstantial adverbs semantically, they pattern like objects syntactically, e.g., in being separable from V by ASP (showing non-incorporation) (3a), in co-occurring with duration/frequency phrases (3b), in combining with V + affected object (3c), in being relativizable (3d):

- (3) a. Ta hua-**guo** na-mian qiang.  
he draw-ASP that-CL wall ‘He has drawn on that wall.’
- b. wo shang xingqi chi-le **san-ci/tian** mian/fandian.  
I last week eat-LE **three-times/day** noodle/restaurant  
‘I ate noodles/at restaurants three times/days last week.’
- c. wo jiu hua-le **ta** san-zhang zhi.  
I only paint-LE **him** three-CL paper  
‘I only painted on three pieces of paper (on him) (he was affected).’
- d. ta chi de (**canting**) dou shi haohua canting.  
he eat DE (**restaurant**) all be fancy restaurant  
‘(The restaurants where) he ate were fancy restaurants.’

In presence of a canonical AG/EXP subject, non-canonical objects seem to compete with canonical objects & each other; only one is allowed. Cf. (2a-e) and (4a-e):

- (4) a. \*Wo chi **da-wan niu-rou mian** ‘I eat beef noodle with a big-bowl’  
b. \*Wo chi **guanzi niu-rou mian** ‘I eat beef noodle in a restaurant’  
c. \*Wo chi **xiawu niu-rou mian** ‘I eat beef noodle in the afternoon’  
d. \*Wo chi **xiawu guanzi** ‘I eat in a restaurant in the afternoon’  
e. \*Wo chi **xiawu guanzi da-wan niu-rou mian**  
‘I eat beef noodle with a big-bowl in a restaurant in the afternoon’

Interestingly, absence of a canonical subject yields more possibilities. Both canonical and non-canonical objects can “promote” to subject. Li (2014) gives alternations like (5)-(8), where argument order appears to invert:

- (5) a. xiao bei he lücha INSTRUMENT > THEME  
small cup drink green.tea  
‘Use the small cup to drink the green tea.’  
b. lücha he xiao bei THEME > INSTRUMENT  
green.tea drink small cup  
‘Green tea is drunk with small cups.’
- (6) a. da dianyingyuan kan dongzuo pian; xiao dianyingyuan kan katong pian.  
big theater watch action film small theater watch cartoon film  
‘Big theaters are for watching action films; small theaters are for watching cartoons’  
LOCATION > THEME  
b. dongzuo pian kan da dianyingyuan; katong pian kan xiao dianyingyuan.  
action film watch big theater cartoon film watch small theater  
‘Action films are to watch in big theaters; cartoons are to watch in small theaters.’  
THEME > LOCATION
- (7) a. wanshang mai lubiantan. TIME > LOCATION  
evening sell street.stall  
‘Sell at street stalls in evenings.’

- b. lubiantan mai wanshang. LOCATION > TIME  
street.stall sell evening  
'Sell at street stalls in evenings.'
- (8) a. zaoshang qie zhe-ba dao. TIME > INSTRUMENT  
morning cut this-CL knife  
'Cut with this knife in the morning.'
- b. zhe-ba dao qie zaoshang. INSTRUMENT > TIME  
this-CL knife cut morning  
'This knife is to cut with in the morning.'

These phenomena sharply distinguish Mandarin from English. The equivalents of (2b-d) would all demand oblique syntax – the presence of P. Furthermore, with P present there would be no “competition”. As the glosses of (4a-e), show, the patient object and all the obliques are freely realizable. Finally, pairs like (5)-(8), in either order, are simply unavailable in English with anything resembling their Mandarin grammar.

### 1.2 In Ditransitives

English and Mandarin appear more similar wrt oblique arguments in ditransitives. Mandarin shows a PP-DOC dative alternation seemingly parallel to English (9a,b):

- (9) a. Zhangsan song/jie le [liang bai kuai qian ] [PP **gei** Lisi]. PP Dative  
Zhangsan give/lend PERF two hundred CL money to Lisi  
'Zhangsan gave/lent two hundred dollars to Lisi.'
- b. Zhangsan song/jie le [Lisi] [liang bai kuai qian ]. DOC  
Zhangsan give/lend PERF Lisi two hundred CL money  
'Zhangsan gave/lent Lisi two hundred dollars.'

But (as noted by Gu 1999) the situation is in fact more complex. Alongside (9a,b) we also get (10a,b), with no English counterpart and “un-English” word order (resp.).

- (10) a. Zhangsan song **gei**/jie **gei** le [Lisi] [liang bai kuai qian ]. DOC  
Zhangsan give to/lend to PERF Lisi two hundred CL money  
Zhangsan gave/lent Lisi two hundred dollars.'
- b. Zhangsan [PP **gei** Lisi] song/jie le [liang bai kuai qian ]. PP Dative  
Zhangsan to Lisi give/lend PERF two hundred CL money  
'Zhangsan gave/lent two hundred dollars to Lisi.'

The basic paradigm in (9)-(10) including “incorporated *gei*” recurs with other Mandarin datives (11)-(12), and with benefactives (13), although sometimes with degradation (12b) or meaning shift (13b) in “bare” DOC form (DOC1).

- (11) a. Zhangsan xie le [yi feng xin ] [PP **gei** Lisi]. PP Dative1  
Zhangsan write PERF one CL letter to Lisi  
'Zhangsan wrote a letter to Lisi.'
- b. Zhangsan xie le [Lisi] [yi feng xin]. DOC1  
Zhangsan write PERF Lisi one CL letter  
'Zhangsan wrote a letter to Lisi.'
- c. Zhangsan xie **gei** le [Lisi] [yi feng xin]. DOC2  
Zhangsan write to PERF Lisi one CL letter  
'Zhangsan wrote a letter to Lisi.'
- d. Zhangsan [PP **gei** Lisi] xie le [yi feng xin]. PP Dative2  
Zhangsan to Lisi write PERF one CL letter  
'Zhangsan wrote a letter to Lisi.'
- (12) a. Zhangsan mai le [yi ben shu ] [PP **gei** Lisi]. PP Dative1  
Zhangsan sell PERF one CL book to Lisi  
'Zhangsan sold a book to Lisi.'
- b. ??Zhangsan mai le [Lisi] [yi ben shu ]. DOC1  
Zhangsan sell PERF Lisi one CL book  
'Zhangsan sold a book to Lisi.'
- c. Zhangsan mai **gei** le [Lisi] [yi ben shu]. DOC2  
Zhangsan sell to PERF Lisi one CL book  
'Zhangsan sold a book to Lisi.'
- d. Zhangsan [PP **gei** Lisi] mai le [yi ben shu ]. PP Dative2  
Zhangsan for Lisi buy PERF one CL book  
'Zhangsan Zhangsan sold a book to Lisi.'
- (13) a. Zhangsan mai le [yi ben shu ] [PP **gei** Lisi]. PP Dative1  
Zhangsan buy PERF one CL book for Lisi  
'Zhangsan bought a book for Lisi.'
- b. Zhangsan mai le [Lisi] [yi ben shu ]. DOC1  
Zhangsan buy PERF Lisi one CL book  
'Zhangsan bought a book from Lisi/?for Lisi.'
- c. Zhangsan mai **gei** le [Lisi] [yi ben shu]. DOC2  
Zhangsan buy for PERF Lisi one CL book  
'Zhangsan bought a book for Lisi.'
- d. Zhangsan [PP **gei** Lisi] mai le [yi ben shu ]. PP Dative2  
Zhangsan for Lisi buy PERF one CL book  
'Zhangsan bought a book for Lisi.'

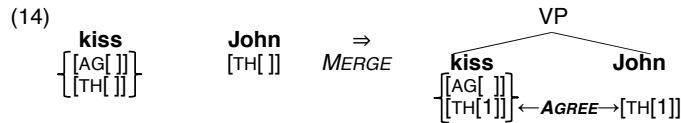
**Q:** How might we make sense of the specific behaviors of the Mandarin examples, and their divergences (dramatic and subtle) from corresponding English forms?

**A:** Mandarin oblique arguments should be analyzed uniformly as **applied objects**, counterpart to those found in world languages like Bahasa, Kinyarwanda, Halkomelem, etc.

## 2.0 Projection from $\theta$ -features (Larson 2014)

Larson (2014) offers an account of projection based on analyzing  $\theta$ -roles as **syntactic features** and  $\theta$ -role assignment as **feature agreement**, and controlled via a  **$\theta$ -feature hierarchy**.

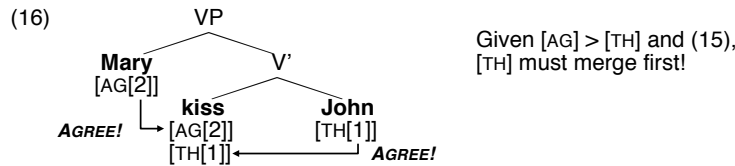
In simplest form: assume  $\theta$ -features [AG], [TH], [GL], [LOC], etc. born by preds and args that undergo agreement at the point of external merge:



Assume also a feature hierarchy [AG] > [TH] > [GL] > [LOC] > ... and the constraint (15):

(15) **Constraint:** a feature in a set can undergo agreement only if there are no lower-ranked, unagreed features in the set.

Then the hierarchy of  $\theta$ -features will determine the hierarchical projection of args:



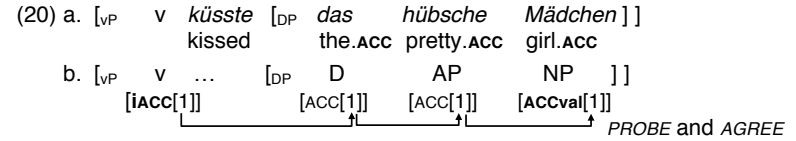
## 2.1 Syntactic Features (Pesetsky & Torrego 2007)

Syntactic theory now distinguishes instances of features F according to whether they are **interpretable**, **valued** or neither (i.e., **uninterpretable-unvalued**).

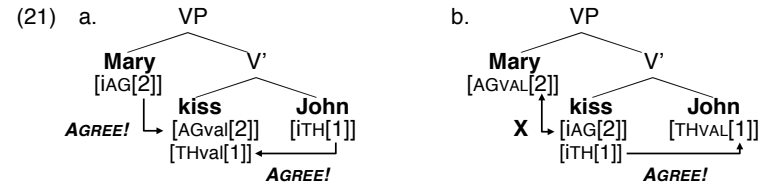
- (17) a. [iF[ ]]                    **interpretable** F, associated with a “meaning”  
 b. [Fval[ ]]                    **valued** F, associated with visible marking  
 c. [F[ ]]                         **uninterpretable-unvalued** F, concordial

Unvalued features ([iF[ ]] or [F[ ]]) probe their c-command domain seeking to agree with another instance of F. For F to be licensed, it must have **both** interpretable and valued instances linked by agreement. Thus (18a-c) will be licensed, but (19a-e) will not:

- (18) a. iF[n] ... Fval[n]                    b. iF[n] ... F[n] ... Fval[n]  
 c. iF[n] ... F[n] ... F[n] ... Fval[n]
- (19) a. iF[ ]                    c. Fval[ ]                    e. iF[ ] ... Fval[ ]  
 b. iF[n] ... F[n]                    d. F[n] ... Fval[n]

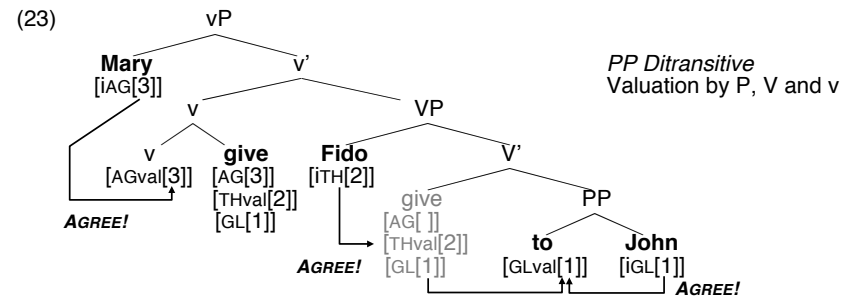
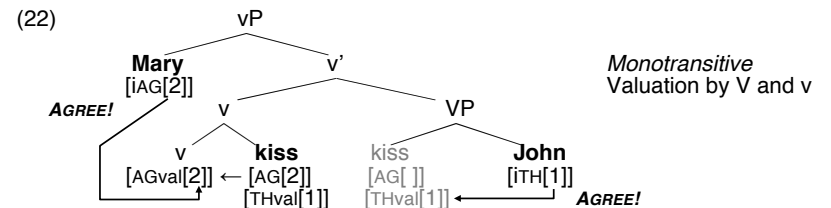


This refinement obliges us to decide where  $\theta$ -features are interpretable and where valued: on args vs. on preds.



## 2.2 Further Refinements (Larson 2014)

- $\theta$ -features are interpretable on arguments
- if  $\alpha$  bears a set of features of the same type, then at most one can be valued.
- $\theta$ -features are valued on V's, v's and P's



These proposals retain the basic picture in (16):  $\theta$ -hierarchy determines projection of args. v's and P's enter to allow the feature valuation that V can't achieve on its own.

2.3 Argument Inversions

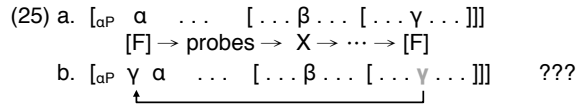
2.3.1 Movement and Minimality

Derivational analyses purporting to raise lower arguments across higher ones (e.g., Psych Movement, Dative Shift, Instrumental Inversion) face a serious challenge from Minimality.

Under the MP theory of movement, a head  $\alpha$  bearing an edge feature + a feature [F] probes for another [F]-bearing  $\beta$  in its domain (24a). Probing  $\beta$ ,  $\alpha$  agrees on [F], activates its edge feature and raises  $\beta$  to its Spec (24b).

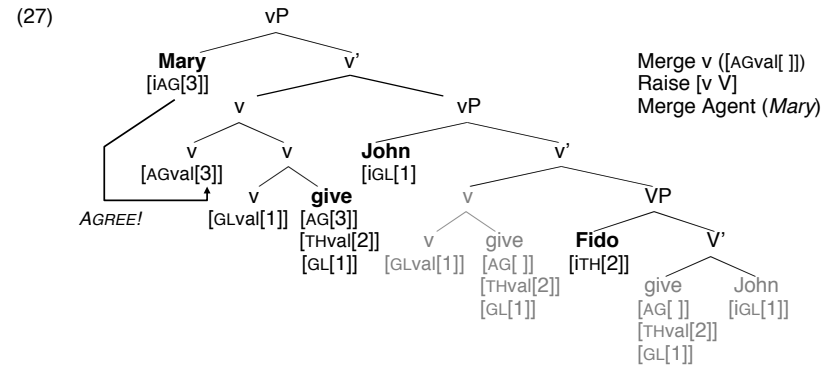
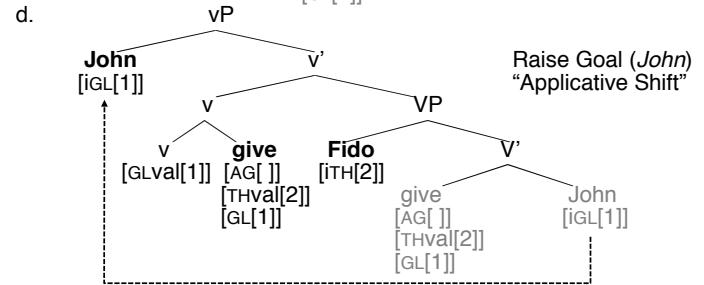
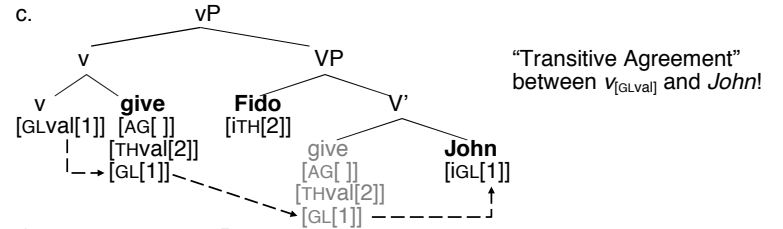
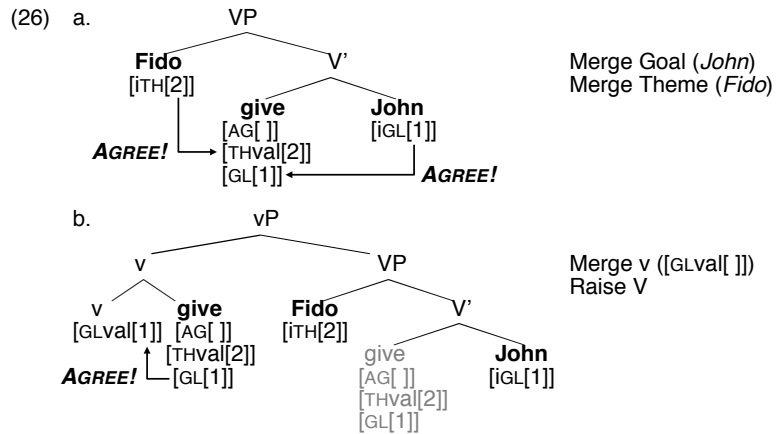


Crucially, probe-goal respects Minimality;  $\alpha$  can't probe  $\gamma$  "through" an intervening  $\beta$  that is a potential [F]-bearer (25a). But then how can raising of a lower  $\gamma$  across a higher  $\beta$  occur? How can  $\alpha$  establish agreement with  $\gamma$  necessary for raising (25b)?

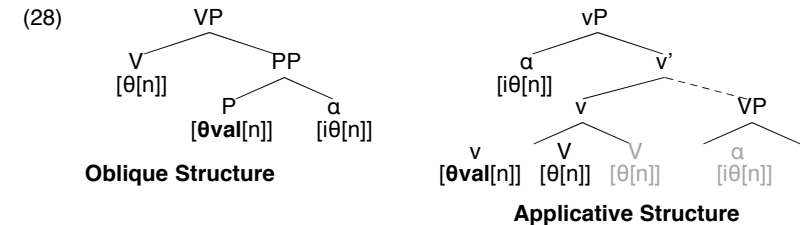


2.3.2 "Transitive Agreement"

The existence of a single head carrying a set of  $\theta$ -features enables argument inversion **without Minimality violation**. (26a-d) show how.



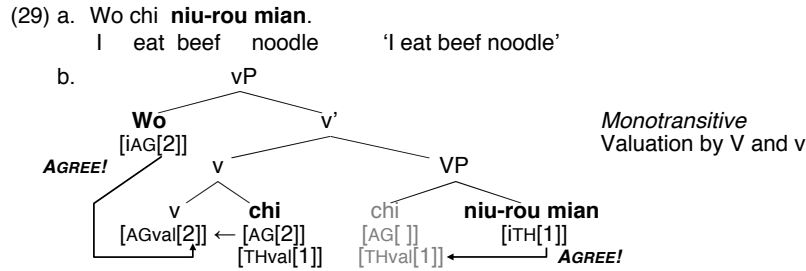
Larson (2014) terms the raising in (26d) **Applicative Shift (A Shift)** and takes it to underlying derivation of all applied objects. The schematic relation:



### 3.0 Mandarin Again

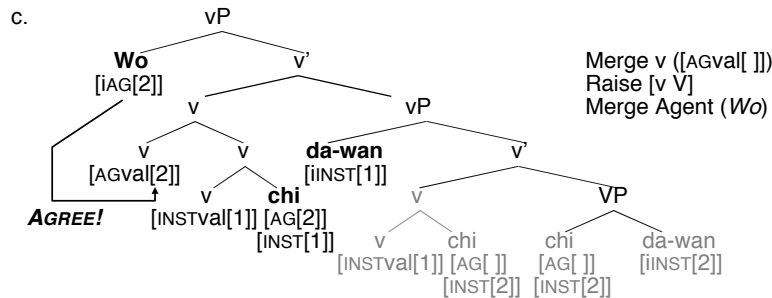
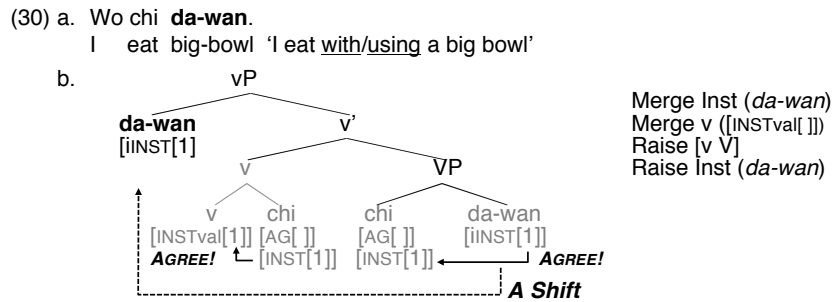
#### 3.1 Monotransitives with Canonical Subjects and Canonical objects

Mandarin monotransitives with canonical subjects and canonical objects (29a) can be analyzed in parallel with the English cases (29b) (cf. 22):



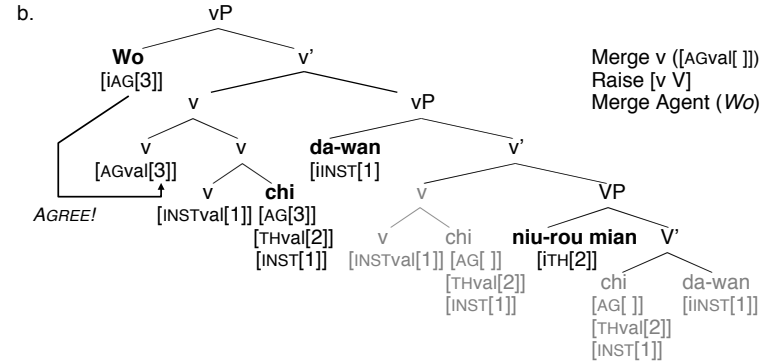
#### 3.2 Monotransitives with Canonical Subjects and Non-canonical Objects

We analyze monotransitives with canonical subjects and non-canonical objects (30a) as involving valuation by v carrying an oblique  $\theta$ -feature and A Shift (30b,c).



**Question:** Why does Mandarin disallow co-occurrence of non-canonical & canonical objects in (31a). What is the difference between (31b) and the English DOC in (27)?

- (31) a. \*Wo chi da-wan niu-rou mian  
I eat big-bowl beef noodle 'I eat beef noodle with a big-bowl'

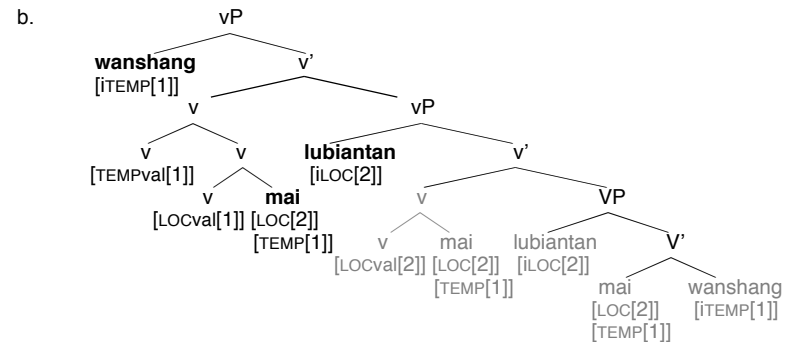


**Our Proposal (1<sup>st</sup> Pass):** Case. Assume  $v_{[AGval]}$  and  $v_{[GLval]}$  are case probes in Mandarin and English, but  $v_{[INSTval]}$  ( $v_{[LOCval]}$  and  $v_{[TEMPval]}$ ) aren't in general (see below). Counting T, there will be 3 case probes in (27), but only 2 in (31b). Not enough!

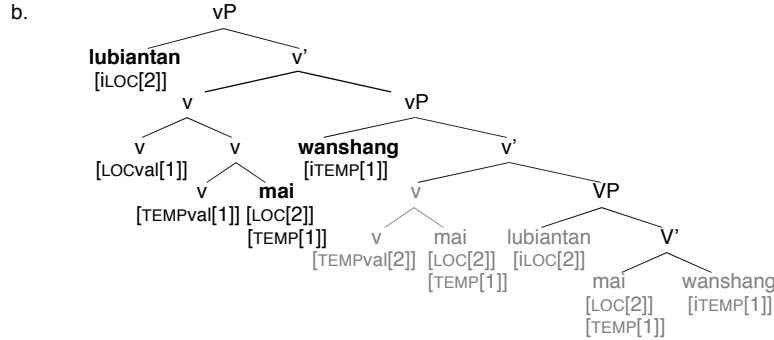
#### 3.3 Monotransitives with Non-canonical Subjects and Objects

Monotransitives with non-canonical subjects and non-canonical objects (32a) and (33a) can be assigned derivations involving two instances of A Shift. Order of args reflects order of v merger:  $v_{[LOCval]} > v_{[TEMPval]}$  VS.  $v_{[TEMPval]} > v_{[LOCval]}$  (resp).

- (32) a. wanshang mai lubiantan.  
evening sell street.stall  
'Sell at street stalls in evenings.'
- TIME > LOCATION



(33) a. lubiantan mai wanshang.  
 street.stall sell evening  
 'Sell at street stalls in evenings.'



**Question:** Isn't there a case problem in (32b)/(33b)? T is a case probe, but  $v_{[LOCval]}$  and  $v_{[TEMPval]}$  were said not to be. (This is how we blocked (31b).) We seem to have 2 args but only 1 case probe!

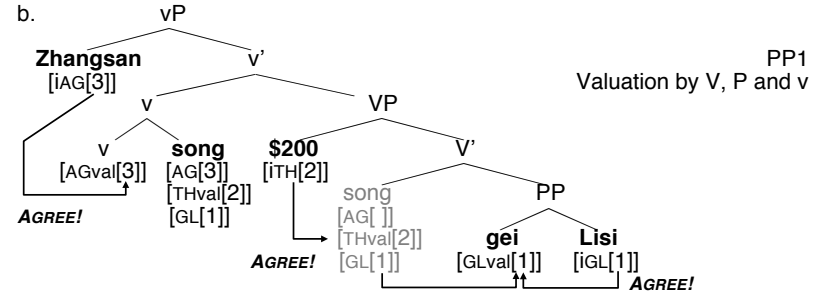
Descriptively, Mandarin seems always able to license 2 args regardless of  $\theta$ -role. Hence 2 case probes always seem available. Perhaps Mandarin little v governed by T always has the case-licensing privilege of T.

**Our Proposal (2<sup>nd</sup> Pass):** Assume  $v_{[AGval]}$  and  $v_{[GLval]}$  are inherent case probes in Mandarin and English, but  $v_{[INSTval]}$ ,  $v_{[LOCval]}$  and  $v_{[TEMPval]}$  aren't. Assume in Mandarin (but not English), the highest v – i.e., v heading the vP selected by T – can be a **derived case probe**. Then  $v_{[TEMPval]}$  is a derived case probe in (32b) and  $v_{[LOCval]}$  is a derived case probe in (33b).

**3.2 Ditransitives**

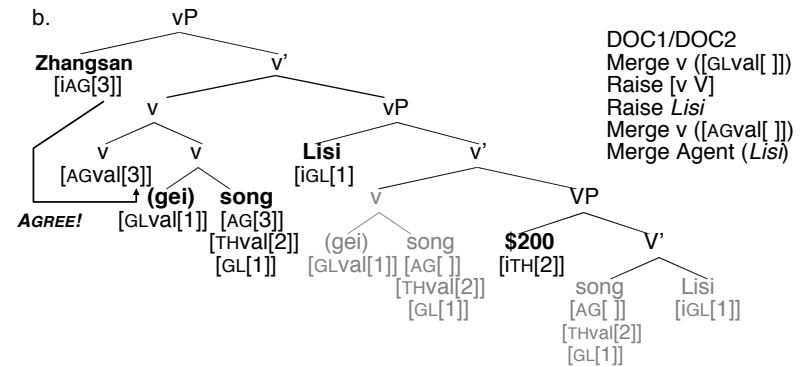
We analyze Mandarin ditransitives largely in parallel with English, following Zhang (2015). PP ditransives with *gei* are derived analogously to English *to*-datives cf. (23):

(34) a. Zhangsan song le [liang bai kuai qian ]<sub>[PP gei Lisi]</sub>.  
 Zhangsan give PERF two hundred CL money to Lisi  
 'Zhangsan gave/lent two hundred dollars to Lisi.'



Mandarin double object constructions (DOC1 and DOC2) (35a) we derive analogously to English DOC forms (cf. 25). Following Paul and Whitman (2009), but especially Zhang (2015), we assume *gei* in DOC2 can realize  $v_{[GLval]}$  – i.e., *gei* is ambiguous between v and P (32b).

(35) a. Zhangsan song (gei) le [Lisi] [liang bai kuai qian ].  
 Zhangsan give PERF Lisi two hundred CL money  
 'Zhangsan gave Lisi two hundred dollars.'



Case in these structures is accommodated just as in English.

Finally, we assume Mandarin PP2 Datives (36a) to derive from PP1 Datives by fronting + adjunction, tentatively to the largest vP (36b).

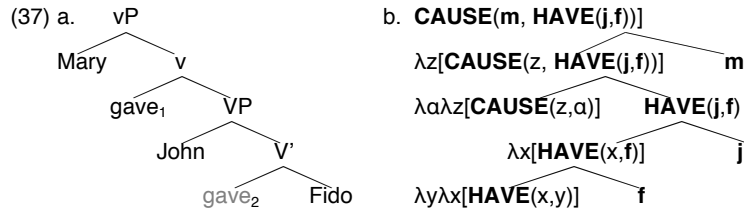
(36) a. Zhangsan [<sub>PP gei Lisi</sub>] song le [liang bai kuai qian ].  
 Zhangsan to Lisi give PERF two hundred CL money  
 'Zhangsan gave/lent two hundred dollars to Lisi.'  
 b. Zhangsan [<sub>PP gei Lisi</sub>] [<sub>VP Zhangsan song le [liang bai kuai qian]</sub>] [<sub>PP gei Lisi</sub>]

### 4.0 Syntax, Semantics and Selection

This analysis resembles other current theories in invoking “light v heads” or “light verbs” in derivation. But it differs radically in its view of these elements.

#### 4.1 Predicate Decomposition

Consider the tree in (37a). One analysis of the dual position of *give* is that the two positions correspond to two sub-relations (*CAUSE*, *HAVE*) that constitute *give* semantically (37b):



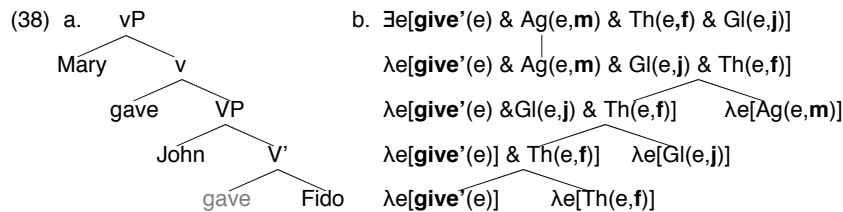
Properties of this Analysis:

- Decompositional – *give* essentially denotes λzλyλx[CAUSE(z, HAVE(x, y))].
- “Bearing a θ-role” is a derivative notion; e.g., “bearing the recipient-goal θ-role” just means “being the subject of *HAVE*” (Jackendoff 1987).
- Classical Fregean notion of selection; predicates require arguments of specific types in order to be saturated.
- Combining order is determined by semantic structure (λzλyλx...).

Call this the **Predicate Decomposition Analysis**. This broad view appears to underlie many current analyses of “light verbs” in Mandarin (Lin 2001; Feng 2003, Huang 2008, Huang, Li and Li 2009; Li 2014; Tsai 2007, 2014)

#### 4.2 Argument Separation

Consider a different way to interpret (38a), suggested by Krifka (1992), and employing ideas from Davidsonian event semantics (38b).



Properties of this Analysis:

- Non-decompositional – *give* denotes λe[**give'**(e)], the bare event predicate.
- Dual position of *give* has no semantic import; purely syntactic.
- θ-relations are not derivative notions, but primary semantic constituents.
- θ-relations “come with their arguments”; semantic composition is conjunction
- There is no semantic sense in which *give* selects any of its arguments, or in which they select it! Radical non-Fregeanism.
- The only notion of selection possible here is syntactic. What ensures that λe[**give'**(e)] combines with the right array of “role-satellites” isn’t semantic, so it must be formal.

Call this the **Argument Separation Analysis**.

The theory presented here is of this second kind. θ-features function as a formal mechanism for associating arguments and predicates. θ-features are interpretable on arguments, as for Krifka. Hence θ-features must be purely formal ([Fval] or [F]) elsewhere, e.g., on lexical & functional heads, including light v’s. Light v’s thus have no semantics; V<sub>[AGval]</sub>, V<sub>[GLval]</sub>, V<sub>[INSTval]</sub>, V<sub>[LOCval]</sub>, V<sub>[TEMPval]</sub> are purely formal & contentless, serving only to value θ-features.

#### 4.2 Selection and Mandarin

Davidsonian argument separation and a strictly syntactic account of selection seems to fit the facts of Mandarin better than more classical, semantically based views.

For a given Mandarin verb (Li 2014):

- It seems very difficult to establish “basic valence”
- It seems very difficult to establish a root set of associated θ-roles.
- Canonical argument roles seem suppressible.
- Non-canonical oblique roles seem realizable as arguments, subject to plausibility in context.

This variability suggests:

- No structured Fregean concept lying behind the verb, dictating a fixed # of arguments required for “saturation”,
- No determinate set of semantic roles associated with verbs; bare event predicates.
- Selection is a composite notion, part pragmatic, part statistical/distributional, etc.
- Selection only seems definite in virtue of becoming “digitized” by formal grammar.

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